Stream: HANGING ROCK CEK. Cross Section: # 1 Date: 10/10/04 Crew: JSF, LET, JTL, MLM Reach: Bank **Erodibility Variable** Index Erosion Bank Erosion Hazard Index Potential Bank Height/Bankfull Height Bank Erosion Potential Bankfull Study Bank Very Low Low Moderate High Very High Extreme Height (ft) A/B Height (ft) VERY 1.0 B Bank Height/ Value 1.0 - 1.11.11 - 1.191.2 - 1.51.6 - 2.02.1 - 2.8>2.8 LOW 2.7' 2.71 4.0 - 5.9 1.0 Bankfull Height Index 1.0 - 1.92.0 - 3.96.0 - 7.98.0 - 9.0 10 Root Depth/Bank Height Root Depth/ Value 1.0 - 0.9 0.89 - 0.50.49 - 0.30.29 - 0.150.14 - 0.05 < 0.05 **Erodibility Variable** Root Bank Height Index 1.0 - 1.92.0 - 3.94.0 - 5.96.0 - 7.98.0 - 9.010 CIA 79 - 55 29 - 15 Depth (ft) Weighted Value 100 - 80 54 - 30 14 - 5.0 <5.0 10 EXTIZEME C Root Density Index 1.0 - 1.92.0 - 3.94.0 - 5.9 6.0 - 7.98.0 - 9.010 21 - 60 0 0 - 20 61 - 80 81 - 90 91 - 119 Value >119 Bank Angle Weighted Root Density 1.0 - 1.92.0 - 3.94.0 - 5.9 6.0 - 7.98.0 - 9.0Index 10 Surface Value 100 - 80 79 - 55 54 - 30 29 - 15 14 - 10 <10 Root D*(C/A) 1.0 - 1.9Density Protection Index 2.0 - 3.94.0 - 5.96.0 - 7.98.0 - 9.010 10 EXTREME (%) D 0 0% **Bank Materials** Bank Angle Bedrock (Bedrock banks have very low bank erosion potential) Bank Boulders (Banks composed of boulders have low bank erosion potential) Angle Cobble (Subtract 10 points. If sand/gravel matrix greater than 50% of bank material, then do not adjust) 3.0 Low Gravel (Add 5-10 points depending on percentage of bank material that is composed of sand) (degrees) 300 Sand (Add 10 points) Surface Protection Silt/Clay (+ 0: no adjustment) Surface Stratification Protection 10 ENTREME (%) Add 5-10 points depending on position of unstable layers in relation to bankfull stage 0% Materials: **Total Score** +8 Very Low Moderate High Very High Extreme LOOSE GRAVEL/SAND Low Stratification: 5-9.5 10-19.5 20-29.5 30-39.5 40-45 46-50 +0 NONE NEWLY CONSTRUCTED \$ OVERLAIN WITH TOTAL SCORE: 42 V. High VEGETATION ESTABLISHES BEHI MAMILE. ONCE DIZOP LOW -

Total Cross Section									
Bankfull Mean Depth (ft)	Slope	Density of Water (lb/ft ³)	Shear Stress (lb/ft²)						
1.5	0.0094	62.4	0.88						
d _{bkf}	S	γ	τ						

12	Near Ba	nk Third			
Bankfull Max Depth (ft)	Slope	Density of Water lb/ft ³	Shear Stress (lb/ft²)		
2.7	0.0094	62.4	1.58		
d _{maxnb}	S _{nb}	γ	τ _{nb}		

Near Bank Stress =
$$\frac{\text{Near Bank Shear Stress } (\tau_{nb})}{\text{Total Shear Stress } (\tau)} = 1.80$$

				新原金属		
Near Bank Stress Range:	0.5 - 1.0	1.01 - 1.50	1.51 - 2.0	2.01 - 2.5	2.51- 3.0	>3.0
Near Bank Stress Rating:	Very Low	Low	Moderate	High	Very High	Extreme

Near Bank Stress Rating	BEHI Rating
MODERATE	VERY HIGH

Bank Erosion Prediction (ft/yr) 0.3

Circle Curve Used:

Erod	ibility Varia	ble	Index	Bank Erosion Potential		30	E	Bank Eros	ion Hazar	d Index			
Bank Height	/Bankfull He	ight				316				Bank Erosi	on Potentia		
Study Bank Height (ft)	Bankfull Height (ft)	A/B	4			40		Very Low	Low	Moderate	High	Very High	Extreme
A	В		3.9	Low		Bank Height/	Value	1.0 - 1.1	1.11 - 1.19	1.2 - 1.5	1.6 - 2.0	2.1 - 2.8	>2.8
7.4	6.2'	1.19		3.1		Bankfull Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root Depth/	Bank Height				e e	Root Depth/	Value	1.0 - 0.9	0.89 - 0.5	0.49 - 0.3	0.29 - 0.15	0.14 - 0.05	<0.05
Root	24				Variable	Bank Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Depth (ft)	C/A				S	Weighted	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 5.0	<5.0
C	-	10/	10	EXTREME THIS	iity	Root Density	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Olo	0	-) 1			음	Contractor	Value	0 - 20	21 - 60	61 - 80	81 - 90	91 - 119	>119
Weighted Ro	oot Density			6 0	E	Bank Angle	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root						Surface	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 10	<10
Density	D*(C/A)					Protection	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
(%) D ວ່າ。 Bank Angle	0	75	10	EXTREME		Materials Bedrock (Bedrock bank	s have very l	ow bank eros	sion potentia	1)	Ш	1 3	
Bank Angle (degrees) 45° Surface Proc	ection		3,2	لصاما	6	Boulders (Banks compo Cobble (Subtract 10 poi Gravel (Add 5-10 points Band (Add 10 points) Gill/Clay (+ 0: no adjustr	nts. If sand/g depending o	gravel matrix	greater than	50% of bank			just)
Protection (%)		\Rightarrow	10	EXTREME		ification Add 5-10 points depend	ing on positi	on of unstabl	e layers in re	elation to bar	nkfull stage		
Materials: 2001 WAD Stratification	:	NEL	+5			Score /ery Low Low 5-9.5 10-19.5	Moderate 20-29.5	High 30-39.5	Very High 40-45	Extreme 46-50			
TOTAL SCO			42.1	V. High	*	BANKS NEW		NOTEUCE	ED VE	-E 7AT	امل الماد	734 70	

	Total Cro	ss Section			
Bankfull Mean Depth (ft)	Slope	Density of Water (lb/ft³)	Shear Stress (lb/ft²)		
2.8	.00016	62.4	6,020		
d _{bkf}	S	γ	τ		

	Near Ba	nk Third	7 7
Bankfull Max Depth (ft)	Slope	Density of Water lb/ft ³	Shear Stress (lb/ft²)
6.2	,00 0 fc	62.4	0.062
d _{maxnb}	S _{nb}	γ	τ_{nb}

Near Bank Stress =
$$\frac{\text{Near Bank Shear Stress } (\tau_{nb})}{\text{Total Shear Stress } (\tau)} = 3.1$$

Near Bank Stress Range:	0.5 - 1.0	1.01 - 1.50	1.51 - 2.0	2.01 - 2.5	2.51- 3.0	>3.0
Near Bank Stress Rating:	Very Low	Low	Moderate	High	Very High	Extreme

ear Bank Stress Rating	BEHI Rating
VERY HIGH	VERY HIGH

Bank Erosion Prediction (ft/yr)	0.8

Circle Curve Used:

Erod	ibility Varia	ble	Index	Bank Erosion Potential	sion									
Bank Height	/Bankfull He	ight												
Study Bank Height (ft)	Bankfull Height (ft)	A/B		J.Tau				Very Low	Low	Moderate	High	Very High	Extrem	
A	B		1.0	VERY			Bank Height/	Value	1.0 - 1.1	1.11 - 1.19	1.2 - 1.5	1.6 - 2.0	2.1 - 2.8	>2.8
2.2	2.2	1.0	,,,	2000		Bankfull Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10	
	Bank Height				0	Root Depth/	Value	1.0 - 0.9	0.89 - 0.5	0.49 - 0.3	0.29 - 0.15	0.14 - 0.05	<0.05	
Root	Jamminoight				riab	Bank Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10	
Depth (ft)	C/A				> -	Weighted	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 5.0	<5.0	
C		(α)	10	EXTREME	Erodibility Variable	Root Density	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10	
0'	0	_) \ \			dib	Devis Assis	Value	0 - 20	21 - 60	61 - 80	81 - 90	91 - 119	>119	
Veighted Ro					E S	Bank Angle	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10	
Root					70 E 115	Surface	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 10	<10	
Density (%) D	D*(C/A)		10	EXTREME		Protection	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10	
Of o Bank Angle Bank Angle (degrees) පිරි	ection		2.5	Low		k Materials Bedrock (Bedrock bank Boulders (Banks compo Cobble (Subtract 10 pol Gravel (Add 5-10 points Sand (Add 10 points) Sill/Clay (+ 0: no adjust	osed of bould ints. If sand/g depending o	lers have low gravel matrix	bank erosio greater than	n potential) 50% of ban			ljust)	
Surface Protection (%)			10	EXTREME		tification Add 5-10 points depend	ling on positi	on of unstabl	e layers in re	elation to bar	nkfull stage			
Materials:	CARUEL	KAND	+ 10			Very Low Low 5-9.5 10-19.5	Moderate 20-29.5	High 30-39.5	Very High 40-45	Extreme 46-50	lagari di sana			
TOTAL SCO	いいっと DRE:		√ 43.5	V. High			CONSTR	UCTED ASHED.	BANKS,	1568	んのロムア	NOT		

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	Total Cros	ss Section	
Bankfull Mean Depth (ft)	Slope	Density of Water (lb/ft ³)	Shear Stress (lb/ft²)
la	0,0217	62.4	(.49
d _{bkf}	S	γ	τ

Near Bank Third							
Bankfull Max Depth (ft)	Slope	Density of Water lb/ft ³	Shear Stress (lb/ft²)				
2.9	0.0217	62.4	3.93				
d _{maxnb}	S _{nb}	γ	τ _{nb}				

Near Bank Stress = $\frac{\text{Near Bank Shear Stress } (\tau_{nb})}{\text{Total Shear Stress } (\tau)} = 2.03$

 Near Bank Stress Range:
 0.5 - 1.0
 1.01 - 1.50
 1.51 - 2.0
 2.01 - 2.5
 2.51 - 3.0
 >3.0

 Near Bank Stress Rating:
 Very Low
 Low
 Moderate
 High
 Very High
 Extreme

Near Bank Stress Rating

BEHI Rating

VERY HIGH

VERY HIGH

Bank Erosion Prediction (ft/yr) 0.8

Circle Curve Used:

Stream: HA	Nowin Park Coll	Reach:			Cross Section: # 4			Date: 10	6104	Crew: v	MULKE	4
Erod	libility Variable	Index	Bank Erosion Potential				Bank Eros	ion Hazar	d Indov			
Rank Height	/Bankfull Height		1 Otelliai	Bank Erosion Hazard Index Bank Erosion Potential								
Study Bank							T		Dank Erosi	On Fotential		
Height (ft)	Height (ft) A/B				75		Very Low	Low	Moderate	High	Very High	Extreme
Α	В	4.0	mor.		Bank Height/	Value	1.0 - 1.1	1.11 - 1.19	1.2 - 1.5	1.6 - 2.0	2.1 - 2.8	>2.8
4.606	3.9 1.20				Bankfull Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root Depth/	Bank Height			ple	Root Depth/	Value	1.0 - 0.9	0.89 - 0.5	0.49 - 0.3	0.29 - 0.15	0.14 - 0.05	<0.05
Root				Erodibility Variable	Bank Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Depth (ft)	C/A	00	VERY	> >	Weighted	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 5.0	<5.0
С		8.5	HUH	iii.	Root Density	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
0.5	0.113			odik	Bank Angle	Value	0 - 20	21 - 60	61 - 80	81 - 90	91 - 119	>119
Veighted Ro	oot Density			m		Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root					Surface	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 10	<10
Density	D*(C/A)				Protection	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
(%) D		10	EXTREME									
30	3.3			Ban	k Materials							
Bank Angle					Bedrock (Bedrock banks	s have very l	ow bank eros	sion potentia)			
Bank	N				Boulders (Banks compo	sed of bould	ers have low	bank erosio	n potential)			
Angle		3.3	1 1		Cobble (Subtract 10 poi	nts. If sand/g	gravel matrix	greater than	50% of bank	k material, th	en do not ad	just)
(degrees)		2.5	Low		Gravel (Add 5-10 points	depending of	on percentage	e of bank ma	terial that is	composed o	f sand)	
47.30					Sand (Add 10 points)							
Surface Pro	tection				Silt/Clay (+ 0: no adjustr	ment)						
Surface	N				219							
Protection		7.2	141614	Stra	tification							
(%) 20		,,,,	HIGH		Add 5-10 points depend	ing on positi	on of unstabl	e layers in re	lation to bar	kfull stage		
Materials:				Tota	al Score							
	ELISAND	+17			Very Low Low	Moderate	High	Very High	Extreme			
Stratification			1		5-9.5 10-19.5	20-29.5	30-39.5	40-45	46-50			
ou aumounon	NOJE	+0			1010	20 20.0			10 00			
TOTAL SCO			+									
OTAL SOC	/ILL.	40	V. 14611									

Total Cross Section							
Bankfull Mean Depth (ft)	Slope	Density of Water (lb/ft³)	Shear Stress (lb/ft²)				
2.0	0.0005	62.4	0.0624				
d _{bkf}	S	γ	τ				

	Near Bank Third								
Bankfull Max Depth (ft)	Slope	Density of Water lb/ft ³ Shear Str. (lb/ft ²) 62.4 0.122							
3.9	0.0005	62.4	0.122						
d _{maxnb}	S _{nb}	γ	τ_{nb}						

Near Bank Stress = $\frac{\text{Near Bank Shear Stress } (\tau_{nb})}{\text{Total Shear Stress } (\tau)} = 1.95$

 Near Bank Stress Range:
 0.5 - 1.0
 1.01 - 1.50
 1.51 - 2.0
 2.01 - 2.5
 2.51 - 3.0
 >3.0

 Near Bank Stress Rating:
 Very Low
 Low
 Moderate
 High
 Very High
 Extreme

Near Bank Stress Rating

BEHI Rating

MODERATE

VERY HIGH

Bank Erosion Prediction (ft/yr)

Circle Curve Used:

Stream: 1-1 A	いろいろん	an Car	Reach:			Cross Section: ギ	5		Date: 101	20104	Crew: A	ruck & y	
	ibility Varia		Index	Bank Erosion Potential			E	Bank Eros	ion Hazar	d Index			
Bank Height	/Bankfull He	eight								Bank Erosi	on Potential		
Study Bank Height (ft)	Bankfull Height (ft)	A/B						Very Low	Low	Moderate	High	Very High	Extreme
Α	В		5.0	mors.		Bank Height/	Value	1.0 - 1.1	1.11 - 1.19	1.2 - 1.5	1.6 - 2.0	2.1 - 2.8	>2.8
5.17	3.8	1.34	1			Bankfull Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root Depth/	AND DESCRIPTION OF THE PERSON NAMED IN				e e	Root Depth/	Value	1.0 - 0.9	0.89 - 0.5	0.49 - 0.3	0.29 - 0.15	0.14 - 0.05	<0.05
Root					Erodibility Variable	Bank Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Depth (ft)	C/A			1	> N	Weighted	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 5.0	<5.0
С		$\cup \cap $	7.5	141014	lith	Root Density	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
1.0	0.20				odik	Bank Angle	Value	0 - 20	21 - 60	61 - 80	81 - 90	91 - 119	>119
Weighted Ro	oot Density				l m		Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root						Surface	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 10	<10
Density	D*(C/A)		8.0	VERY		Protection	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
(%) D ખິວິເ Bank Angle	14		0,0	141011		k Materials Bedrock (Bedrock banks	s have very i	ow bank eros	sion potentia	l)			
Bank Angle (degrees) 39 Surface Prof	tection		3.0	Low		Boulders (Banks compo Cobble (Subtract 10 points Gravel (Add 5-10 points) Sand (Add 10 points) Silt/Clay (+ 0: no adjustr	nts. If sand/g depending o	ravel matrix	greater than	50% of bank		V. Control of the Control	just)
Surface Protection (%)			2.2	Low	Stra	tification Add 5-10 points depend		on of unstabl	e layers in re	elation to bar	nkfull stage		
コッパ。 Materials: しょちゃんとん	GRAVELI	SANO	+6			I Score Very Low Low	Moderate	High	Very High	Extreme			
Stratification			10			5-9.5 10-19.5	20-29.5	30-39.5	40-45	46-50			
TOTAL SCO			31.7	HIGH									

Total Cross Section							
Bankfull Mean Depth (ft)	Slope	Density of Water (lb/ft³)	Shear Stress (lb/ft²)				
2.5	0,00063	62.4	0.0975				
d _{bkf}	S	γ	τ				

	Near Ba	nk Third	
Bankfull Max Depth (ft)	Slope	Density of Water lb/ft ³	Shear Stress (lb/ft²)
3.8	6,00063	62.4	8.148
d _{maxnb}	S _{nb}	γ	τ_{nb}

Near Bank Stress =
$$\frac{\text{Near Bank Shear Stress } (\tau_{nb})}{\text{Total Shear Stress } (\tau)} = 1.52$$

Near Bank Stress Range:	0.5 - 1.0	1.01 - 1.50	1.51 - 2.0	2.01 - 2.5	2.51- 3.0	>3.0
Near Bank Stress Rating:	Very Low	Low	Moderate	High	Very High	Extreme

Near Bank Stress Rating	BEHI Rating
MODERATE	HIGH

Bank Erosion Prediction (ft/yr)

Circle Curve Used:

Erodibility Variable Index Erosion		ble	Index	Bank Erosion									
Potential			Potential			E	Bank Eros	ion Hazar	d Index				
Bank Height	/Bankfull He	eight								Bank Erosi	on Potential		
Study Bank Height (ft)	Bankfull Height (ft)	A/B						Very Low	Low	Moderate	High	Very High	Extreme
A	В		2.5	Low		Bank Height/	Value	1.0 - 1.1	1.11 - 1.19	1.2 - 1.5	1.6 - 2.0	2.1 - 2.8	>2.8
2,15	1.9	1.13				Bankfull Height	Index	1.0 - 1.9	2.0 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root Depth/L	Bank Heigh				0	Root Depth/	Value	1.0 - 0.9	0.89 - 0.5	0.49 - 0.3	0.29 - 0.15	0.14 - 0.05	<0.05
Root					riah	Bank Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Depth (ft)	C/A			1	> a	Weighted	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 5.0	<5.0
С		10/	14.1	MOD	iit	Root Density	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
1.0'	0.47	-) r			Erodibility Variable	Panis Angla	Value	0 - 20	21 - 60	61 - 80	81 - 90	91 - 119	>119
Neighted Ro	oot Density					Bank Angle	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root					Surface	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 10	<10	
Density	D*(C/A)					Protection	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
(%) D		$J \sim$	5.0	moi2.									
90%	42.3				Bank	k Materials							
Bank Angle					1	Bedrock (Bedrock bank	s have very l	ow bank eros	sion potentia)			
Bank				VERY		Boulders (Banks compo	sed of bould	ers have low	bank erosio	n potential)			
Angle			1	Low	1	Cobble (Subtract 10 poi							just)
(degrees)		$\overline{}$	1.5		1 (Gravel (Add 5-10 points	depending of	n percentag	e of bank ma	iterial that is	composed o	f sand)	
11.40		•			1	Sand (Add 10 points)							
Surface Prot	ection					Silt/Clay (+ 0: no adjust	ment)						
Surface		Λ		VERY									
Protection					Strat	tification							
90%		$\overline{}$	1.5	100		Add 5-10 points depend	ing on position	on of unstabl	e layers in re	lation to bar	nkfull stage		
Materials:					Tota	I Score							
GRAVE	LISAN	5	+6			Very Low Low	Moderate	High	Very High	Extreme			
Stratification	:					5-9.5 10-19.5	20-29.5	30-39.5	40-45	46-50			
Ne	SUS		10							211			- 100
	DE.		ī	†									
TOTAL SCO	IL.												

Total Cross Section							
Bankfull Mean Depth (ft)	Slope	Density of Water (lb/ft³)	Shear Stress (lb/ft²)				
1.0	0.0076	62.4	0.474				
d _{bkf}	S	γ	τ				

	Near Ba	nk Third	
Bankfull Max Depth (ft)	Slope	Density of Water lb/ft ³	Shear Stress (lb/ft²)
1.9	0.0076	Density of Water lb/ft ³ Shear 3 (lb/f)	0.901
d _{maxnb}	S _{nb}	γ	$ au_{nb}$

Near Bank Stress = Near Bank Shear Stress
$$(\tau_{nb})$$
 = $(0.5)^{\circ}$

Near Bank Stress Range:	0.5 - 1.0	1.01 - 1.50	1.51 - 2.0	2.01 - 2.5	2.51- 3.0	>3.0
Near Bank Stress Rating:	Very Low	Low	Moderate	High	Very High	Extreme

Near Bank Stress Rating	BEHI Rating
MODERATE	MUDERATE

Bank Erosion Prediction (ft/yr)

Circle Curve Used:

Stream: HANGING	lour cer	Reach:			Cross Section:	7		Date: 101	401	Crew: ↑	nulkey	
Erodibility V	ariable	Index	Bank Erosion Potential			E	Bank Eros	ion Hazar	d Index			
Bank Height/Bankful	l Height								Bank Erosi	on Potential		
Study Bank Bankfu Height (ft) Height							Very Low	Low	Moderate	High	Very High	Extreme
A B		4.9	MOD.		Bank Height/	Value	1.0 - 1.1	1.11 - 1.19	1.2 - 1.5	1.6 - 2.0	2.1 - 2.8	>2.8
2.4 1.7	1,41	1			Bankfull Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root Depth/Bank He				e e	Root Depth/	Value	1.0 - 0.9	0.89 - 0.5	0.49 - 0.3	0.29 - 0.15	0.14 - 0.05	<0.05
Root				Erodibility Variable	Bank Height	Index	1.0 - 1.9	2.0 + 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Depth (ft) C/A			1	\sigma	Weighted	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 5.0	<5.0
С		3.3	Low	ility	Root Density	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
1.5' 0.62	5	177		dib	Dank Anala	Value	0 - 20	21 - 60	61 - 80	81 - 90	91 - 119	>119
Weighted Root Dens	sity			E O	Bank Angle	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root					Surface	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 10	<10
Density D*(C//	A) (A)		l. 1		Protection	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
(%) D		3.8	Low									
9000 56.	3			Ban	k Materials							
Bank Angle					Bedrock (Bedrock banks	have very I	ow bank eros	sion potentia	1)			
Bank	Λ.				Boulders (Banks compos	sed of bould	ers have low	bank erosio	n potential)			
Angle		,	VERY		Cobble (Subtract 10 poin	its. If sand/g	ravel matrix	greater than	50% of bank	k material, th	en do not ad	just)
(degrees)		1.8	لفات		Gravel (Add 5-10 points	depending o	n percentag	e of bank ma	terial that is	composed o	f sand)	
18.8°					Sand (Add 10 points)							
Surface Protection					Silt/Clay (+ 0: no adjustn	nent)						
Surface	Λ.											
Protection			NERRY	Stra	itification							
(%)		1.5	low		Add 5-10 points dependi	ng on positi	on of unstabl	e layers in re	lation to bar	kfull stage		
90%					67 6							
Materials:		\ -		Tota	al Score							
GRAVEL/SAND		+ 5			Very Low Low	Moderate	High	Very High	Extreme			
Stratification:		,	1		5-9.5 10-19.5	20-29.5	30-39.5	40-45	46-50			
Shows		+ 0							8 1 1			
TOTAL SCORE:		T										
		20.3	WOD:									

Total Cross Section							
Bankfull Mean Depth (ft)	Slope	Density of Water (lb/ft ³)	Shear Stress (lb/ft²)				
1.3	0.0044	62.4	0.357				
d _{bkf}	S	γ	τ				

Near Bank Third							
Bankfull Max Depth (ft)	Slope	Density of Shear Str Water lb/ft³ (lb/ft²)					
1.7	1.7 0.0044		0.467				
d _{maxnb}	S _{nb}	γ	$\tau_{\sf nb}$				

Near Bank Stress =
$$\frac{\text{Near Bank Shear Stress } (\tau_{nb})}{\text{Total Shear Stress } (\tau)} = 1.31$$

			8 2 2 13			1
Near Bank Stress Range:	0.5 - 1.0	1.01 - 1.50	1.51 - 2.0	2.01 - 2.5	2.51- 3.0	>3.0
Near Bank Stress Rating:	Very Low	Low	Moderate	High	Very High	Extreme

Near Bank Stress Rating	BEHI Rating
Low	Low/mon.

1		
	Bank Erosion Prediction (ft/yr)	0.09

Circle Curve Used:

Stream: UT to HANGING COLK	C. Reach.	Bank		Cross Section: #	1		Date: 101	U104	Crew:	nucke	
Erodibility Variable	Index	Erosion Potential			Е	Bank Eros	ion Hazar	d Index			
Bank Height/Bankfull Height								Bank Erosi	on Potential		
Study Bank Bankfull Height (ft) Height (ft) A/B						Very Low	Low	Moderate	High	Very High	Extreme
A B	4.5	High		Bank Height/	Value	1.0 - 1.1	1.11 - 1.19	1.2 - 1.5	1.6 - 2.0	2.1 - 2.8	>2.8
1.9 1.1 1.73]		Bankfull Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root Depth/Bank Height			<u>e</u>	Root Depth/	Value	1.0 - 0.9	0.89 - 0.5	0.49 - 0.3	0.29 - 0.15	0.14 - 0.05	<0.05
Root			Variable	Bank Height	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Depth (ft) C/A		1 1		Weighted	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 5.0	<5.0
c	3.7	Low	Erodibility	Root Density	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
1.0 0.52			dib		Value	0 - 20	21 - 60	61 - 80	81 - 90	91 - 119	>119
Weighted Root Density			ᇳ	Bank Angle	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
Root				Surface	Value	100 - 80	79 - 55	54 - 30	29 - 15	14 - 10	<10
Density D*(C/A)	4.6	mora		Protection	Index	1.0 - 1.9	2.0 - 3.9	4.0 - 5.9	6.0 - 7.9	8.0 - 9.0	10
(%) D 90% 47.4 Bank Angle Bank Angle (degrees) 32° Surface Protection	2.7	Low		k Materials Bedrock (Bedrock banks Boulders (Banks compos Cobble (Subtract 10 poir Gravel (Add 5-10 points Sand (Add 10 points) Silt/Clay (+ 0: no adjustn	sed of bould nts. If sand/g depending o	ers have low ravel matrix	bank erosio	n potential) 50% of bank	Contract of the same		just)
Surface Protection (%)	1.1	NERY		tification Add 5-10 points dependi	ing on positio	on of unstabl	e layers in re	lation to bar	ıkfull stage		
Materials: GRมะเริ่มกก (X-VAPE) Stratification: No Ne	+ 4			I Score Very Low Low 5-9.5 10-19.5	Moderate 20-29.5	High 30-39.5	Very High 40-45	Extreme 46-50			
TOTAL SCORE:	24.4	MOD.									

Total Cross Section								
Bankfull Mean Depth (ft)	Slope	Density of Water (lb/ft³)	Shear Stress (lb/ft²)					
0.7 ,011		62.4	0.48					
d _{bkf}	S	γ	τ					

	Near Ba	ank Third	
Bankfull Max Depth (ft)	Slope	Density of Water lb/ft ³	Shear Stress (lb/ft²)
1.1	, 011	62.4	0.74
d _{maxnb}	S _{nb}	γ	$ au_{nb}$

Near Bank Stress =
$$\frac{\text{Near Bank Shear Stress } (\tau_{nb})}{\text{Total Shear Stress } (\tau)} = 1.58$$

Near Bank Stress Range:	0.5 - 1.0	1.01 - 1.50	1.51 - 2.0	2.01 - 2.5	2.51- 3.0	>3.0
Near Bank Stress Rating:	Very Low	Low	Moderate	High	Very High	Extreme

Near Bank Stress Rating	BEHI Rating
MODERATE	MODERATE

Bank Erosion Prediction (ft/yr)

Circle Curve Used: